

**Fig. 1A**

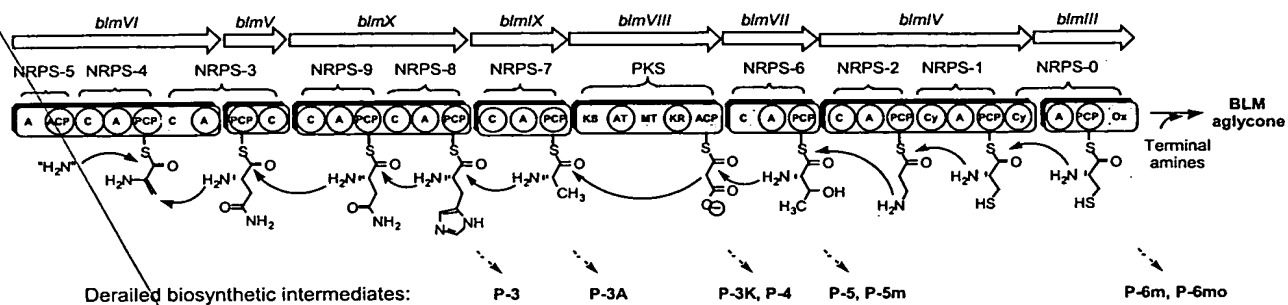


Fig. 1B

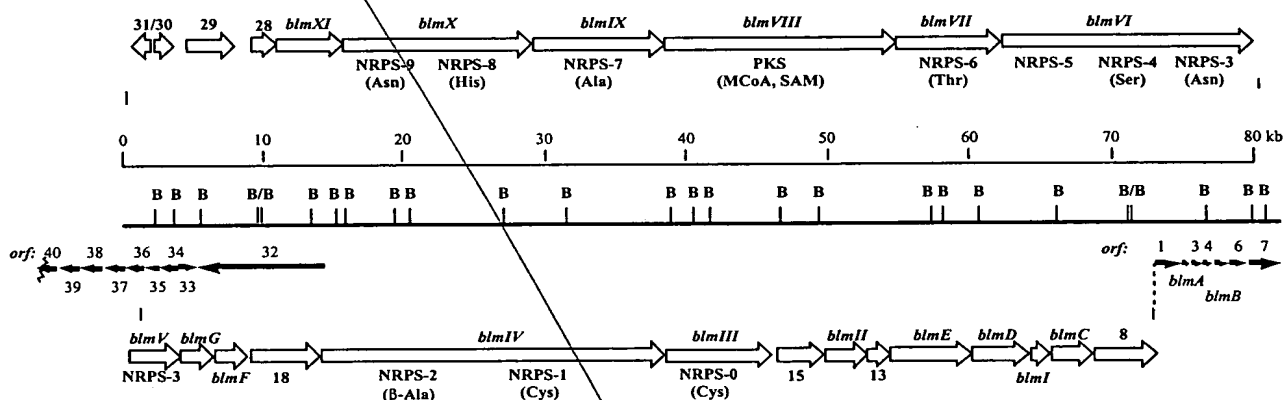


Fig. 2

Fig. 3A

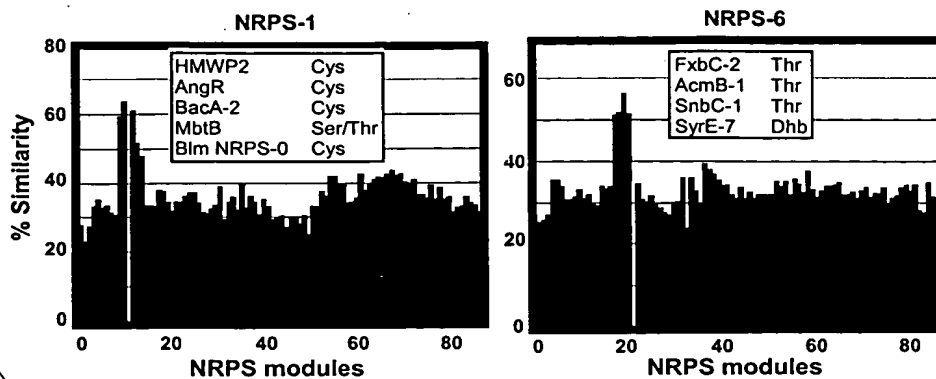


Fig. 3B

NRPS module	Substrate	Residues (PheA numbering) (16)							
		236	239	278	299	301	322	330	331
HMWP2	Cys	L	Y	N	M	S	M	I	W
AngR	Cys	L	Y	N	M	S	M	I	W
BacA-2	Cys	L	Y	N	L	S	L	I	W
MbtB	Ser/Thr	M	L	N	A	G	L	V	H
Blm NRPS-0	Cys	L	Y	H	L	G	L	P	W
Blm NRPS-1	Cys	L	Y	N	L	S	L	I	W
SyrE-7	Dhb	F	W	N	V	G	M	V	H
AcmB-1	Thr	F	W	N	V	G	M	V	H
SnbC-1	Thr	F	W	N	I	G	M	V	H
FxbC-2	Thr	F	W	N	V	G	M	V	H
Blm NRPS-6	Thr	F	W	S	V	G	M	I	H

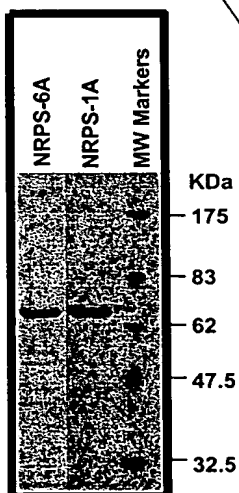


Fig. 3C

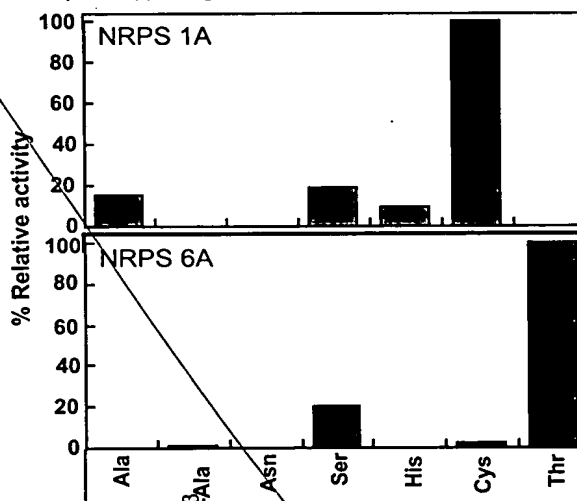


Fig. 3D

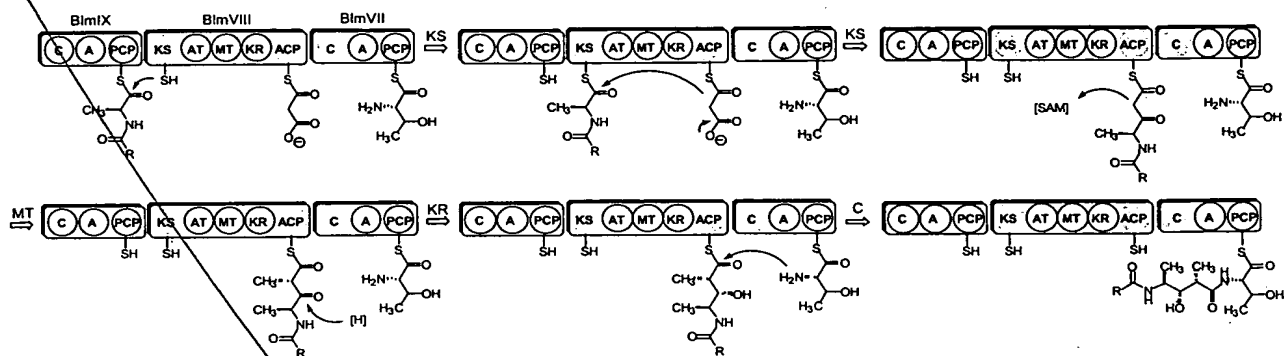
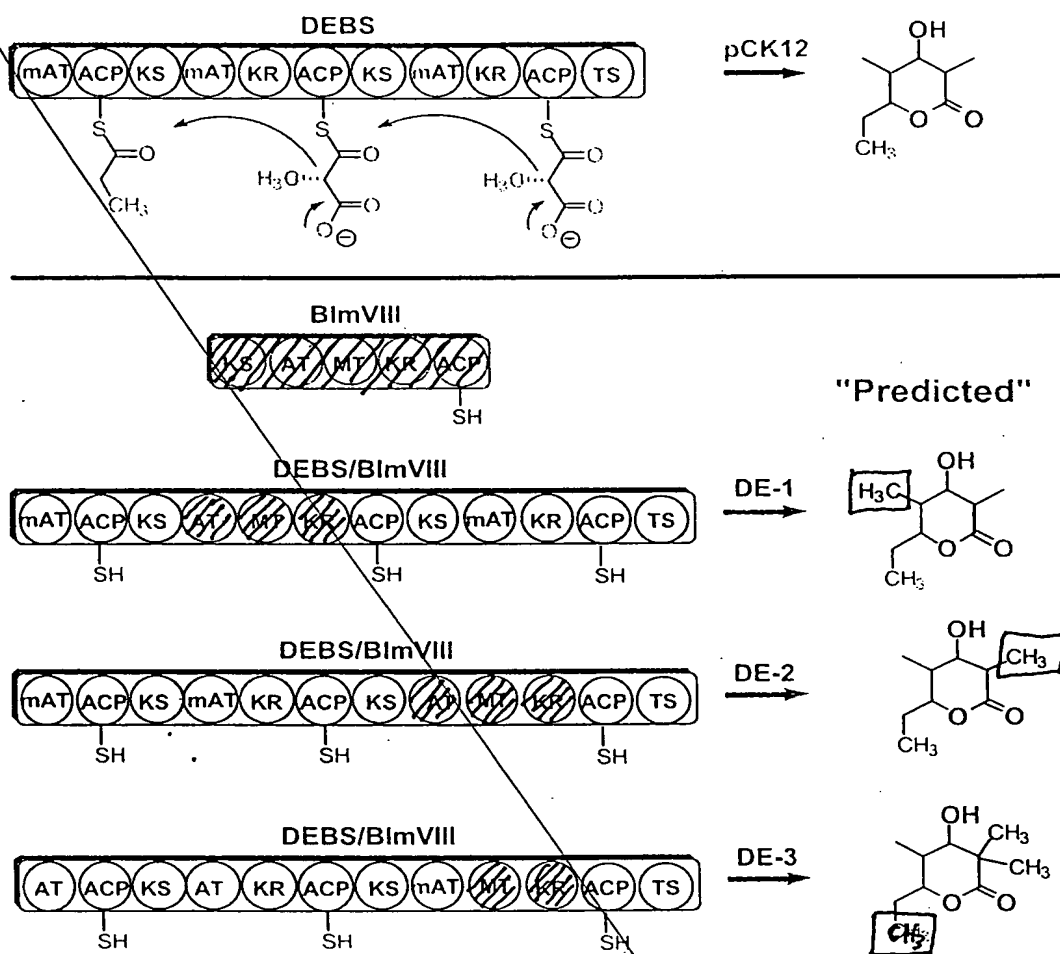
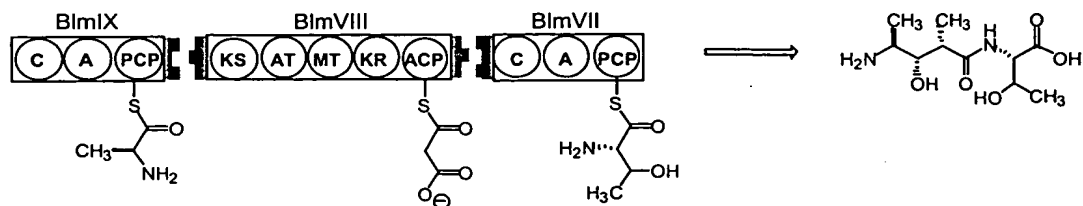


Fig. 4

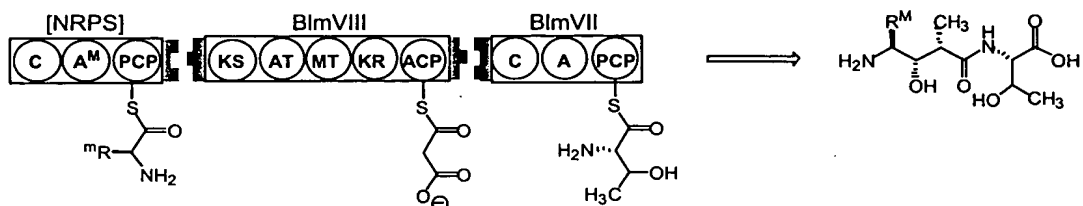


**Fig. 5**

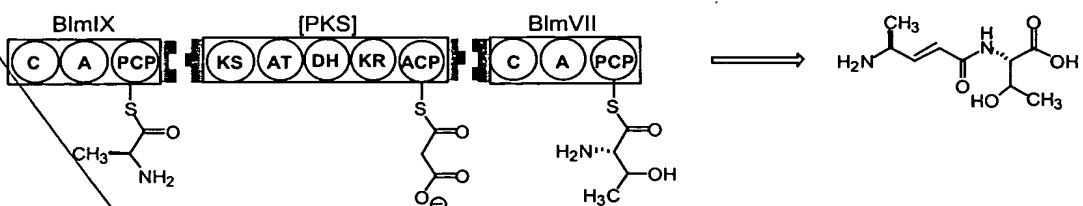
**Fig. 6A**



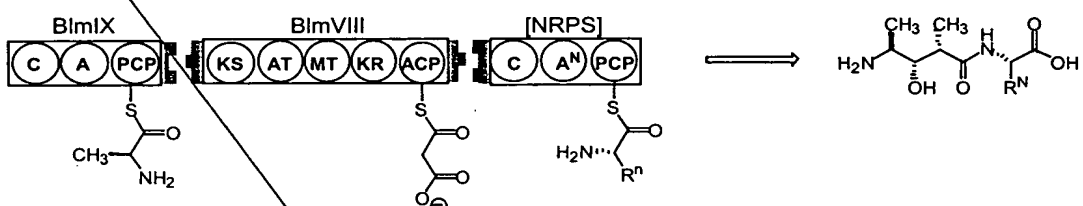
**Fig. 6B**



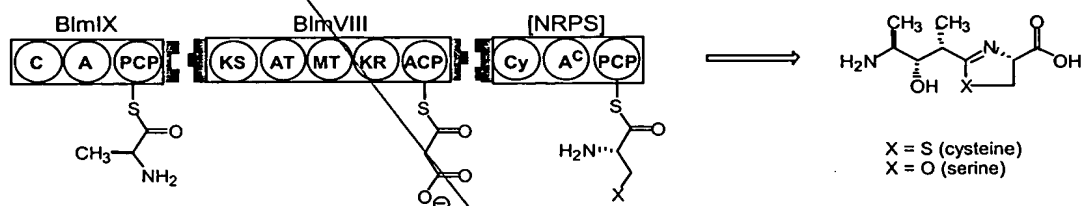
**Fig. 6C**



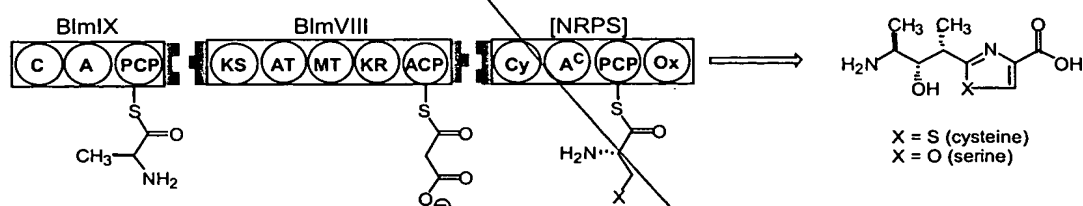
**Fig. 6D**

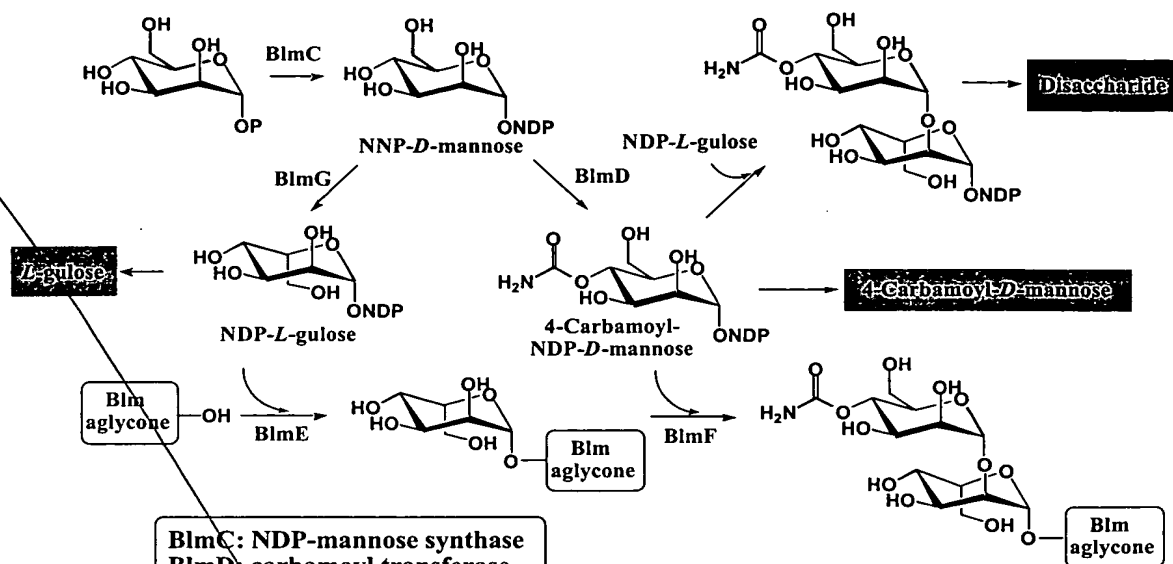


**Fig. 6E**



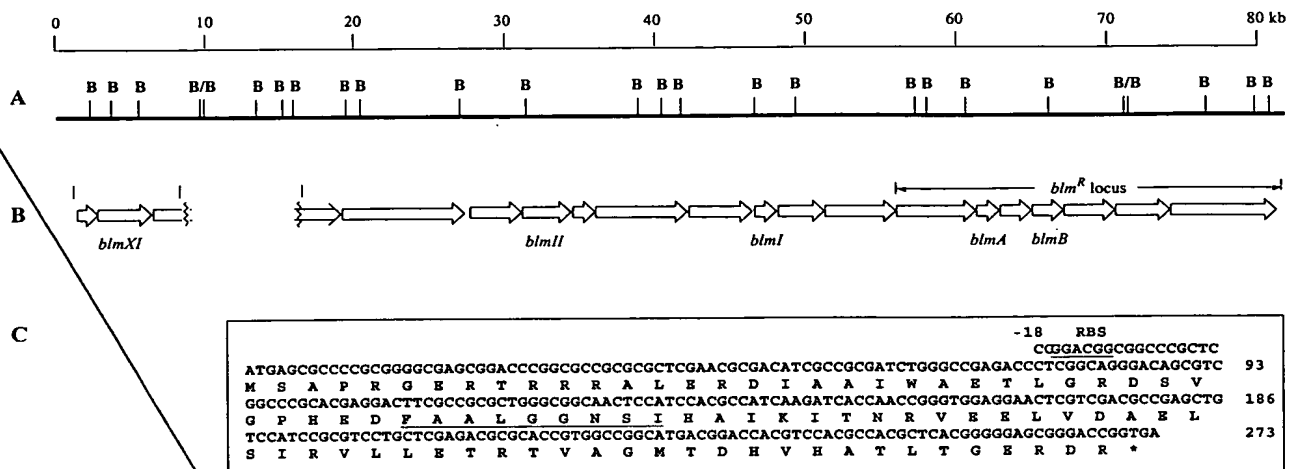
**Fig. 6F**





BlmC: NDP-mannose synthase  
 BlmD: carbamoyl transferase  
 BlmE: Glycosyl transferase  
 BlmF: Glycosyl transferase  
 BlmG: epimerase

**Fig. 7**



**Fig. 8**

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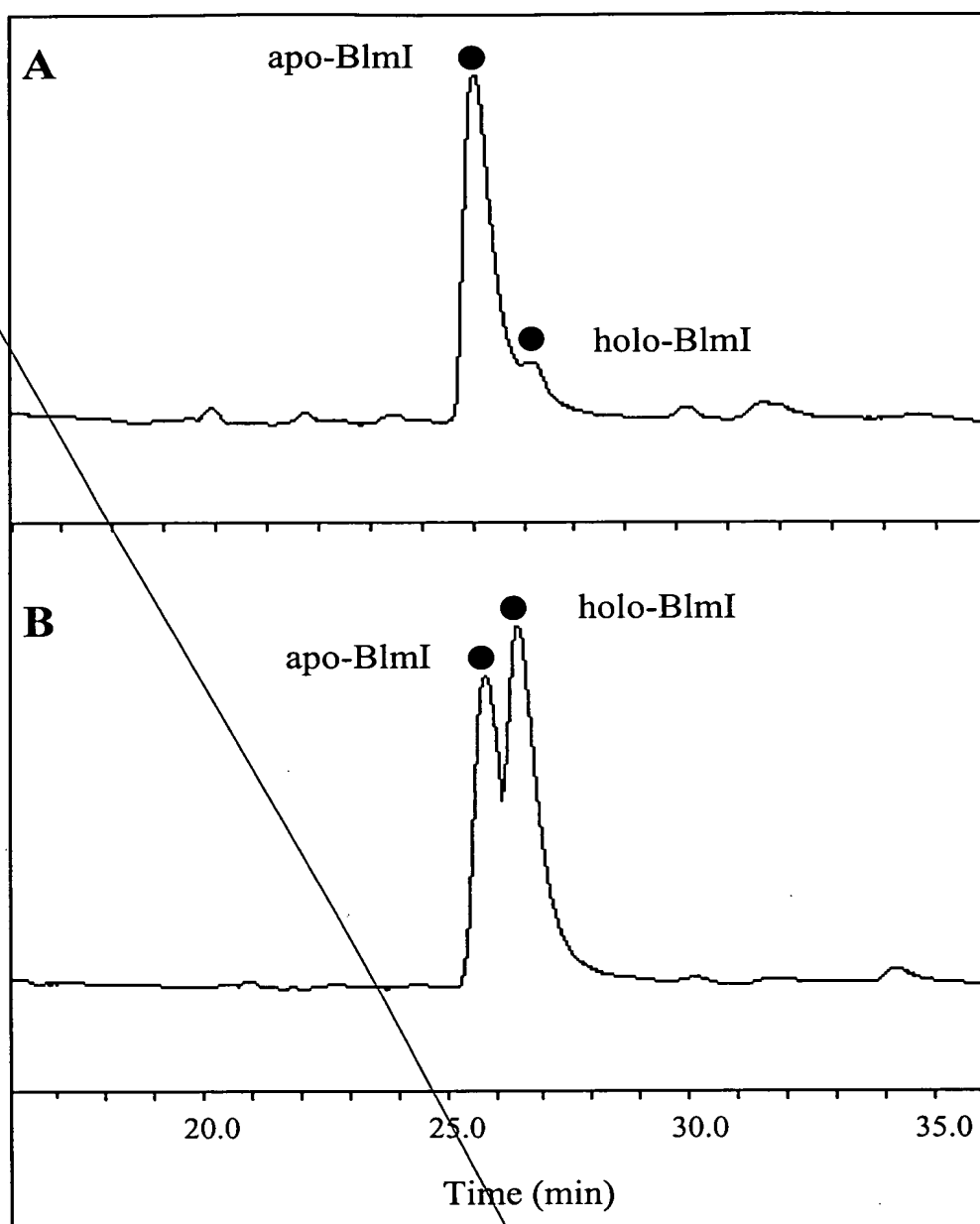


Grs-2 3045-ISIGTEYVAPRTMTEGKLEETWKDVGLQRVGTHDDFFETI3GHSL-3089  
 Srfa-3 960-DQLAEFWIGPRNEMEETPAQWSEVLGRKQIGHDDFFETI3GHSL-1004  
 Vir-S 557-GRSVEGRGVPTPOQEILASLFAEVLGLSKVGHEDFEDL3GHSL-601  
 Saf-B 1661-LDPGQDYLAAPRNEFEARTAAATWEGLLRRERVSVHDSFEDL3GNSL-1705  
 BImI 1-MSAPRGERTRRALERDTAAATWAETLGRDSVSPHEDFAAL3GNST-45  
 consensus 1-i g eyvapR le ia iw evLgr rvGiHddff lGhSl-45

Grs-2 3090-KAMAVISQVHKECQTEVPLRVLEETETIIOGLAKYIEETDTEQYMA-3134  
 Srfa-3 1005-KAMTAVPH.QQETGIDLVPKLEETAPPIAGISAYLKNNGSDGLQD-1048  
 Vir-S 602-LATRLTSRIRTVLGAETIAVRDDEEAPIVEALAEETLEEAREVRPAL-646  
 Saf-B 1706-LATRLATRLAATLOVOAGVRTVEEHRIVAAQAAHFTQATKTHQAH-1750  
 BImI 46-HAIKITNRVEELVDAEELSIRVLEETRIYAGMTDHSVHATLTGERDR-90  
 consensus 46-kAmrv srV 1 ev vrvlfe pTvagla i g t -90

*Fig. 9*

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***Fig. 10***

# Nonreiterative Type I Modular Protein Template

Fig. 11A

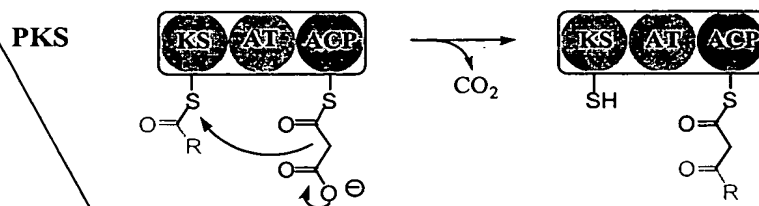
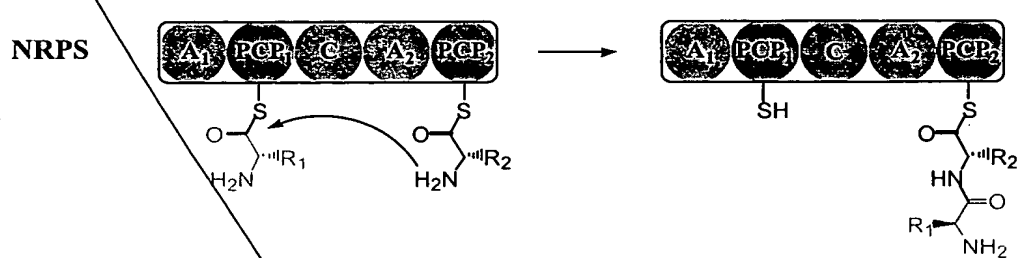


Fig. 11B



## Iterative Type II Protein Complex

Fig. 11C

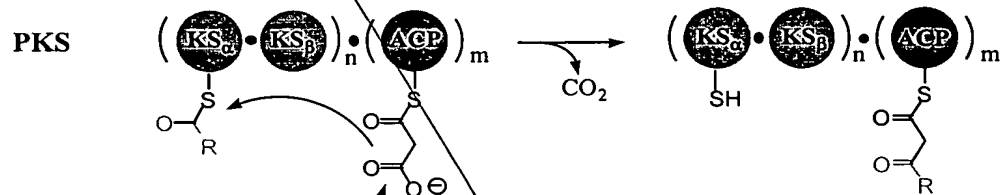
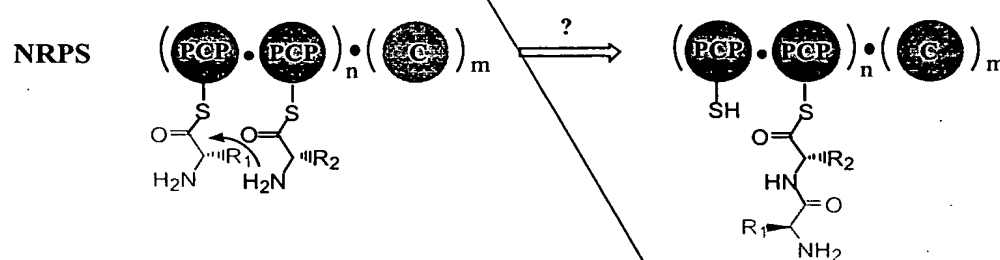
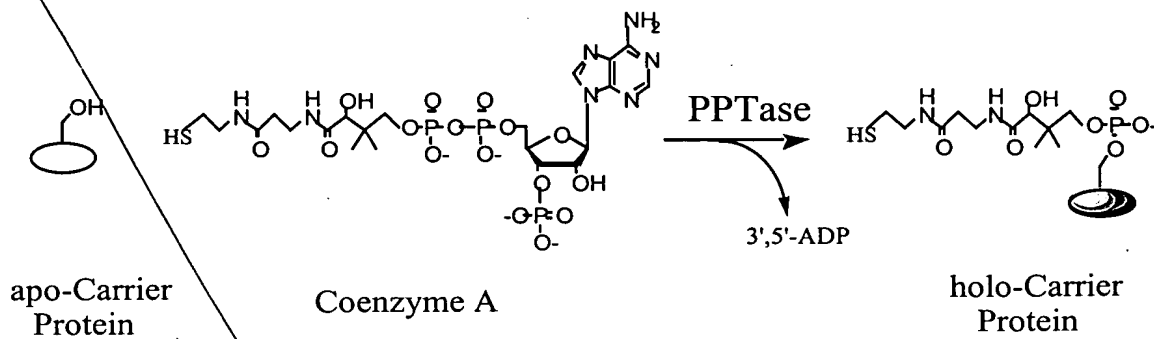
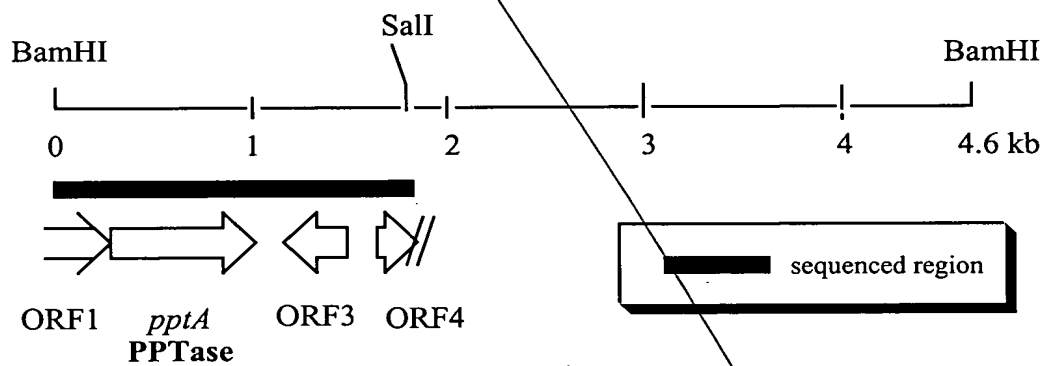


Fig. 11D





**Fig. 12**



**Fig. 13**